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ABSTRACT

This practicum report was designed to help child development students differentiate between the preoperational and concrete operational stages of the Piagetian cognitive hierarchy. The 36 on-campus and 63 instructional television students used a Piagetian Game booklet, which is included in the appendix. Using this booklet, students were able to compare their observations and their subjects' responses to a checklist of characteristics typical of preoperational and concrete operational thought. Students used the booklet successfully and were generally enthusiastic about the practicum. A 35-item reference list and five appendices are included. (PCB)

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Center for the
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A PROJECT TO HELP CHILD DEVELOPMENT STUDENTS RECOGNIZE PIAGETIAN DEVELOPMENTAL STAGES

BY

ANN HUSMANN

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NOVA UNIVERSITY

A PROJECT TO HELP CHILD DEVELOPMENT STUDENTS RECOGNIZE PIAGETIAN DEVELOPMENTAL STAGES

PRACTICUM I SUBMITTED TO THE FACULTY OF THE
EARLY CHILDHOOD EDUCATION PROGRAM
IN CANDIDACY FOR THE DEGREE OF

DOCTOR OF EDUCATION

BY

ANN HUSMANN

NOVA UNIVERSITY
CLUSTER XII

MAY, 1985

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Abstract

A Project to Help Child Development Students Recognize Piagetian Developmental Stages
Husmann, Ann, 1985: Practicum Report, Nova University Ed.D. Early Childhood Education Program
Descriptor: Teacher Training/ Preschool Curriculum/ Epistemology/ Developmental Stages/ Computer-assisted Instruction/ Children's Art

Child Development students often have difficulty in identifying children's cognitive stages. This practicum was designed to help students differentiate between the Preoperational and Concrete Operational stages of the Piagetian cognitive hierarchy. Using Piagetian Game booklets, the students were able to compare their observations and their subjects' responses to a check list of characteristics typical of Preoperational and Concrete Operational thought.

The writer's goals were that students would (1) recognize the need to use at least three separate measures to evaluate a subject's cognitive level; (2) be able to arrive at justifiable conclusions in assessing a subject; and (3) demonstrate mastery of Piagetian cognitive stages through the use of mini-case studies.

Thirty-six on-campus students completed the booklet during the first period of implementation with a mean score of 95% or an "A". Sixty-three instructional television students participated in a subsequent implementation and averaged a score of 91% or an "A". Students in the first implementation averaged 7.7 correct mini-case study answers, falling .3 of a point short of the predicted outcome. The instructional television students' mini-case study results yielded a mean of 7.3 correct answers, .7 of a point short of the predicted outcome. Students were generally enthusiastic about this project and only one person involved in the first implementation did not complete the assignment.

PRACTICUM APPROVAL SHEET

This practicum took place as described.

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August 1, 1984
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This practicum report was submitted by Ann Husmann under the direction of the reviewer listed below. It was submitted to the Ed.D. Program in Early Childhood and approved in partial fulfillment of the requirements for the degree of Doctor of Education in Early Childhood at Nova University.

Approved:

Date of Final Approval of Report	Polly Peterson, Ph. D. Reviewer

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CHAPTER I: INTRODUCTION

El Camino College, one of sixty California public community colleges, is located in Torrance, a Southern California community. The college offers a comprehensive program which is designed to meet a wide spectrum of student needs. Serving those who seek a general education, it also offers occupational programs, transfer education, developmental education, educational support services and community services. Students may earn certificates of competence, certificates of completion and/or an Associate of Arts degree.

The El Camino College District serves nine Los Angeles cities which encompasses a population of almost one million people. The district is bounded on the west by the Pacific Ocean and includes the cities of El Segundo, Manhattan Beach, Hermosa Beach, Redondo Beach and Torrance. Inglewood, Lennox and Hawthorne stretch north of the campus and the city of Lawndale meets the northern edge of the campus.

Incomes in these South Bay cities range from upper and middle income to the lower end of the economic scale. The area supports four major shopping malls and several smaller ones. Reflecting the ethnic diversity of the surrounding cities, the college census (Fall Semester, 1983) shows a student enrollment of over 26,000 with a self-identified

ethnic grouping of 53% Caucasian, 19% Black, 11% Asian, 11% Hispanic, 2% Filipino, and 3% Others.

Part of the Division of Behavioral and Social Sciences, the Early Childhood Department has currently matriculating, eighty students who plan transfers to four-year colleges and universities. One hundred seventy-four students are working toward Associate of Arts degrees with majors in Early Childhood. Course work is also open to individuals who are interested in increasing teaching and/or parenting skills as well as those involved in nursing and human services.

The Early Childhood program is designed to prepare students for employment in a variety of fields. Particular emphasis is placed on subjects mandated by the State Department of Education and the Department of Social Services. Individuals seeking certification for employment at California Childrens Centers must complete the general requirements of an Associate of Arts degree and twenty-four semester units plus student teaching (or two years of documented teaching in an Early Childhood program). Title 22 of the state code mandates that individuals working with children in private nursery schools are to complete twelve semester hours in Early Childhood coursework. Persons choosing to become nursery school directors or administrators must complete an additional three semester hours in an Administration of Nursery Schools class.

El Camino students use community nursery schools, day-care centers, after-school programs and programs for exceptional children for observations and volunteering. Students are placed in selected nursery schools, childrens' centers and Head Start programs for student teaching experiences.

The writer, a faculty member at the college, serves as one of two full-time instructors in the Early Childhood Department (Division of Behavioral and Social Sciences) and teaches five different Early Childhood courses. As a full-time faculty member the writer maintains a minimum of five hours per week for student contact and guidance. Liaison with the community is maintained through meetings of an Early Childhood Advisory Committee which meets semi-annually. Other Early Childhood contacts include serving as a volunteer consultant for church-related nursery schools and membership in the California Community College Early Childhood Educators and the National Association for the Education of Young Children.

CHAPTER II: STUDY OF THE PROBLEM

Instructors involved in both on-campus and instructional television Child Development classes were concerned about the difficulties Early Childhood Education students had in identifying Piagetian stages of cognitive development in infants and young children. Gaining sufficient knowledge in a foundation course such as Child Development was crucial for their successful completion of later course work. By the time students finished Child Development, they should have acquired a working knowledge of Piagetian stages as delineated by Jean Piaget (Piaget 1973). These stages, with readily identifiable characteristics, can help students to lay the groundwork for planning and implementing effective programs for young children. Students were expected to recognize that the development of logical thinking is characterized as occurring in four distinct periods from infancy through adolescence (Piaget and Inhelder, 1969). Each stage--Sensorimotor, Preoperational, Concrete Operational and Formal Operational, represents a way in which the child or adolescent actively constructs knowledge of the world. Piaget (1979) suggests that children need to build up a repertoire of experience and action upon which they can reflect and out of which they will ultimately build

concepts. The task of educators is to match the cognitive demands of tasks with the cognitive abilities of the learners (Brooks et al, 1983).

As part of their course work, students were asked to document the cognitive functioning of children according to Piaget's developmental levels. Many were unable to complete this task accurately. When asked to select and administer cognitive activities appropriate to children between the ages of three and six, only about one third of the students in previous classes were able to synthesize their data and arrive at a justifiable conclusion.

Early Childhood Education students who planned to take a curriculum course in music, art and language arts (Psychology 46) or one which dealt with science, numerical concepts and motor skills (Psychology 47) needed to recognize and interpret the characteristics of the Preoperational period in order to plan effective curriculum for three, four and five year olds. Students should have been able to recognize a child who has reached the stage of Concrete Operations. Children who have reached this stage need a curriculum which offers more complex mental challenges (Piaget, 1958).

Three El Camino Child Development instructors were interviewed by the writer and asked the following question:

"Why do you think Child Development students often have

difficulty in understanding the material presented, particularly the Preoperational Period?"

Instructor "A" felt that many Child Development students experienced difficulty in generalizing concepts to different situations. Concerned about the difficulty that students had with vocabulary, this instructor noted that student writing skills seemed to be "fixed" at a fifth or sixth grade level, with very limited use of compound sentence structure.

Instructor "B" cited the inabililty of many students to go beyond the memory level of Bloom's Taxonomy (Bloom et al, 1969). She stated, "The questions which give my students the most trouble are the ones in which application or synthesis is required. Students expect to memorize and give back information verbatim. They also tend to be egocentric and sometimes have difficulty viewing the world from any perspective but their own."

Many students could do well in their studies according to Instructor "C", if they had more help in mastering the study skills necessary for college work. It was his observation that some students were not committed to setting personal career goals, but just drifted along, trying different courses. He believed that many of his students needed guidance from the Division of Behavioral and Social Sciences counselor.

The College Testing Office reported in a Faculty Resource Update bulletin (May, 1984) that two thirds of the students taking English Placement tests fell into the "underprepared" category. One third functioned below college level in performance and one third functioned below eighth grade in reading ability. The statistics did not reflect the fact that many students avoided taking placement tests because they feared low scores. A representative from the Testing Office believed that the breakdown would have reflected far more underprepared students if all students had been required to take the English Placement test before enrolling for any courses. Many Early Childhood students take only the courses necessary for job placement and never bother with courses needed to complete an A.A. degree.

The writer concurred with Professor John Goldthwait who feels that his students cannot state their thoughts in words that convey them with exactness (Goldthwait 1983). When closely questioned, students can think through complex problems but have difficulty in getting their message, which should be easily understood, committed to paper.

In an effort to discover the base level of knowledge that students in an on-campus Child Development class had before embarking on their exploration of Jean Piaget's theory of the Preoperational Period, a pilot study was conducted. A pre-test of twenty test bank questions keyed

to Berger's text THE DEVELOPING PERSON (Chapters 9 and 10 concerning physical development, art and cognition) was administered. Thirty-two students participated and the results showed a mean of 55.6 or 11.2 correct answers out of a possible twenty. A post-test of the same questions taken by twenty-seven students after completing the readings and playing Piagetian and computer games with invited preschoolers showed a mean of 64.8 or 12.9 correct answers. Results of the post-test tended to indicate that many students lacked a thorough understanding of the concepts which would have helped them to have a better grasp of Child Development.

Students who are what Piaget described as Formal Operational can reason with concepts, relationships, abstract properties, axioms, and theories. They can use symbols to express ideas. Concrete Operational thinkers need reference to familiar actions, objects and observable properties. They use limited and intuitive understanding of formal reasoning patterns (Collea 1984).

To explore how many students were themselves functioning at what Piaget would identify as the Formal Operational level, a group of Child Development students were given three games to play. They were asked to determine balance beam values and the cause of the rate of swing in a pendulum, games used by Inhelder and Piaget

(1958). The students were also asked to develop a room-numbering system for an imaginary hotel, using the numbers 1, 2, and 3. Only thirteen students out of the thirty-three who participated were able to come up with correct solutions by using pencil and paper on the first two problems. When given a chance to experiment with blocks, yard sticks, plastic objects and string, a number of students could not resist changing their answers. They also began to help one another. With concrete materials in hand, about two-thirds of the students were able to develop a systematic, workable hotel numbering system, an indication of Formal Operational reasoning. The Formal Operational person is able to systematically combine a set of elements to create all possible combinations (Day 1981). The example illustrates that many students need careful guidance and practice in learning to problem-solve. It also demonstrated that many students are successful learners when they are given the opportunity to have "hands on" experiences.

A number of factors contributed to student difficulty in handling Child Development course content. Many students were what could be identified as "under-prepared". They struggle in college because of lack of mastery in skills such as reading and writing. The college staff has been committed, however, to helping these students learn the basic skills necessary for college survival and for career

preparation. The problem of the under-prepared college student has not gone away. The college staff has been exploring methods which would result in effective student career preparation. Course work which incorporates basic skill techniques while simultaneously presenting content has been an on-going priority at El Camino.

Because of their limited pre-college preparation, students needed well-organized materials that drew together information necessary for successful course completion. They required course content related to things they knew and understood. For several years Child Development students had used the book THINKING IS CHILD'S PLAY by Evelyn Sharp (1969) to complete projects with three-to-seven year old children. Written for parents, this book explained basic Piagetian concepts in simple language and suggested games to play which would help to assess a child's cognitive level. This book was now out of print and no affordable materials were found to replace it.

Child Development instructors during the past three years designed class projects appropriate for student use in working with young children. The formats were based on text book materials, and were not as extensive as the outline used previously with THINKING IS CHILD'S PLAY (Sharp 1969).

One attempt was made to have students use PIAGET: A

HANDBOOK FOR PARENTS AND TEACHERS OF CHILDREN IN THE AGE OF DISCOVERY: PRESCHOOL-THIRD GRADE (Fenton, et al 1983). Students did not purchase this book because the cost more than doubled with a newly published edition.

A difficulty in the Berger text, THE DEVELOPING PERSON, used by on-campus classes, was that it showed expected "age-typical" answers to Piagetian games. Little was left for the student to discover. The Papalia and Olds text, A CHILD'S WORLD,INFANCY THROUGH ADOLESCENCE, 3rd Edition (1982), used for the instructional television class, showed only the most commonly known Piagetian games and also discussed probable answers children give.

Students were able to guess at outcomes and articulate conclusions about a child's developmental level without looking for information beyond what their textbooks had to offer. Two Child Development students' papers were challenged because their Spring, 1984 papers followed a project format that had been in use before the Sharp text went out of print. Another student invented a child's drawing, using a very "mature" version of what the student thought a child's drawing might be like. The same student also included a complex classification purported to have been done by a three year old child. Since the work presented would have been beyond the normal cognitive capabilities of a three year old, the student's paper was

challenged and declared unacceptable.

The problem with which instructors of Child Development were faced was to help students recognize the important characteristics of the Piagetian stages of cognitive development. The solution sought complemented other instructional methods such as using tapes and films and inviting children to class to play Piagetian games with students.

LITERATURE REVIEW

Numerous studies have supported the basic approach to mastery learning which asserts that nearly all students can master most of what they are taught, given appropriate conditions. Generally stated, the conditions are:

1) well-planned and executed instruction
2) adequate time for students to learn the material
3) regular checks on learning with immediate feedback and methods of correcting inadequacies (Block, 1971)

Students in Child Development were given course objectives during their first class session, along with a calendar containing a class schedule and tentative testing dates. Students were able to buy Study Guides which repeated the textbook material in simple language and which contained questions for self-testing. The first tests given in each of the writer's Child Development on-campus classes were open-book. This helped students to familiarize themselves

with the kinds of questions asked during the course of the semester and also ensured that students purchased their texts during the first day or two of class. Pre-tests and exercises relating to films and child-guests also helped the students to assess personal mastery of Child Development.

The retention rate of Instructional Television students was much lower than that of on-campus classes. During the Spring, 1984 semester, only 115 out of an original 250 students finished the Child Development Instructional Television course.

The finding that television course retention is lower than on-campus retention was corroborated by Dr. Joseph Ribal (1980). In his paper, A REPORT ON THE FAMILY PORTRAIT PROGRAM--EDUCATIONAL TELEVISION AT HOME AND EDUCATIONAL TELEVISION ON CAMPUS, he pointed out that retention is strongly related to the factor of student variability in ability to function minimally with instructional materials.

A critical aspect of student achievement, whether the student attends an on-campus class or watches an at-home video screen, is teacher expectation for high achievement. According to Kelly (1980): "Schools which attain high levels of student outcomes have faculties who: (a) accept the basic objectives of the school; (b) have a commitment to high expectations for students and for student achievement; and (c) accept responsibility for achieving stated goals." In

promoting cognitive development, the teacher must consider the maturation process and the developmental level of the learner. The types of environmental interactions that students pursue and participate in are dependent upon their individual maturation and development (Evans and Le Vine, 1982).

Allowing students to have "field experience" in an introductory course designed for teachers can start the process of socializing potential teachers into the teaching role. Students can learn "what teaching is" and "what teachers are expected to do". Students can benefit from two different types of exploratory field experiences, one observational and one participatory (Dueck et al, 1984). Learning to observe children systematically is an essential skill for any one who plans to engage in teaching.

Participation experience with children helps students who are thinking about becoming teachers to decide if they really want to enter the teaching profession. With an early field experience program the student has the opportunity to examine his personal ideas about schools and teaching in the light of the reality of the situation (Elliott and Mays, 1979).

Students need to explore ways of interacting effectively with children so that they are better able to assess cognition. Piagetian tasks are designed to reveal

the dominant features of each developmental stage and are idea for student use. These tasks involve using ordinary household items such as water, clay, buttons, etc., and are designed to measure logical reasoning. Pre-service teachers can learn to use manipulative materials with children for the purpose of evaluation (Young, 1983).

The student should focus on the child's reasoning. The adult assesses "why" the child thinks as he/she does rather than the "what" a child can do in terms of the content or product of the child's thinking. The quality of the answer determines if the child truly understands. Tests built from Piagetian tasks may be very effective for the prediction of achievement in school subjects (Kaufman and Kaufman, 1972). Also, passing an item at any given Piagetian stage assumes mastery of the acquisition of all preceding stages (Clarizio, 1972). Students need to know that young children are less adept at solving conservation problems than older children, but they also need an explanation of the changes in thinking and an identification of the processes involved in the change (Siegel, 1981). The Piagetian approach recognizes that wrong answers can often tell more about a child's thinking than right ones.

Another way of revealing children's cognitive progress is through the use of the microcomputer. In addition to imparting information on a one-to-one basis with a high

success rate when well-written and thoroughly validated programs are used, the computer can provide remedial and self-paced instruction as well as assessment of student progress (Herriott, 1982).

El Camino Child Development students have access to a microcomputer program (EARLY GAMES) designed for children between the ages of three and eight, which helps to assess a child's ability to interact with the computer in nine different exercises ranging from alphabet recognition to matching games and numerical concepts. Also included is a "Logo"-type exercise which permits children to draw lines and simple figures. Logo, invented by Seymour Papert, is a problem-solving tool. Logo's organization helps the student break down problems and also helps them to build up problems and learn to see how the process works (Estes, 1984).

An experimental program for five year olds in simple computer programming revealed that five year olds are able to use the computer as a tool for thinking and solving problems and learning about mathematics in a meaningful way. The key to success in learning programs is lots of individual attention at the beginning when the commands, spacing, and the use of special keys are learned (Hines, 1983).

In another experimental program, nursery school children were introduced to two types of computer programs.

One type consisted of drill and practice of pre-reading skills such as alphabet, number recognition and discrimination and analogy skills. The other type contained Logo programs which were designed to encourage a child's cognitive development in such areas as estimating distances, relating speed to numerical values, following directions, and encouraging divergent thinking. Preschool boys and girls seemed to spend the same amount of time at the computer. Once on the computer the girls seemed to prefer the drill-and-practice programs while the boys preferred the creative problem-solving programs (Swigger, Campbell and Swigger, 1983).

It has been observed by researchers that computer use encourages in children such social outcomes as sharing and taking turns. Having an adult available to the children promotes social and cognitive learning and removes the fear often expressed that children who use computers will become machine rather than people-oriented (Williams, 1984).

Another measure of a child's cognitive ability could be the drawing the child produces. Kolls (1980) found a highly significant correlation between a child's drawing development and the ability to "conserve" on Piagetian tasks. She explains that art can, among other things, consist of equivalences or relationships between objects and ideas. Through experience the child develops a mental image

or concept of an object. Dependent at first on his visual perception, he begins to build a concept or knowledge of other objects in his environment. It is the action rather than the perception that becomes the primary source of knowledge (Piaget, 1967).

The child develops symbol systems which help him to organize reality. Kolls feels that there appears to exist parallel development between drawing and cognition and that learning to think is learning to organize one's experiences. It follows, in her opinion, that drawing is visual thinking. A word of caution about using children's drawings to evaluate their cognitive levels is expressed by Rhoda Kellogg (1970). She feels that analysis performed on children's art work in such instruments as the Goodenough Draw-A-Person test is subjective and therefore, invalid. She says, "A realistic use of art as a mental test would seek to interpret the child's drawings as standard, below, or above, and the interpretations would acknowledge the formidable problems of naming the structures in child art." Kellogg does point out that child art can be used as a mental test in the sense that a group of drawings done by a child could be classified as "standard", "below" or "above" what is commonplace or normal once such norms were set.

She feels that people such as Koppitz, another projective test designer who advocates analyzing a child's

single drawing, are on the wrong track.

In short, using a child's drawing, if used to indicate his/her cognitive level by looking for inclusions or omissions should not be the only measure included in the evaluation. Kolls found that children who are conservers showed increased naturalism, details and multiple ground lines in attempting perspective. Transitional conservers used a single ground line and had "people" images drawn side by side. Non-conservers often showed un-coordinated drawing efforts which were not anchored to a ground line.

El Camino Child Development students can, through the use of the Piagetian project, experiment with Piagetian games, the computer, and drawings to assess a child's cognitive level. The evaluation process can be a time of one-to-one attention for the child and can have a positive effect on the child's perception of him/her self. At the same time, the examiner has the opportunity to focus on a single child and to gradually assemble the findings into a meaningful interpretation of the child's cognitive function.

In summary, it is important for Child Development students to recognize that cognitive evaluation of children should incorporate a variety of instruments that employ a multi-sensory approach.

CHAPTER III: ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

After completing a Piagetian project with a child between the ages of three and eight, Child Development students were able to identify the child's Piagetian stage or substage of development. Students differentiated, as defined by Piaget, between the cognitive skills of the Preoperational Period and the period of Concrete Operations.

The following objectives were projected for this practicum:

1. Students will complete instructor-prepared booklets which will enable them to pin-point the specific Piagetian stage or substage the children are experiencing (Appendix A).
2. Students will answer post-test questions on Chapter 9 (Appendix B) and Chapter 10 (Appendix C) of the Berger text, THE DEVELOPING PERSON, using the same questions utilized on the pre-test with at least 80% accuracy.
3. Students will demonstrate mastery of Piagetian stages and substages through the use of mini-case studies on their final examination with a success rate of eight out of ten correct identifications (Appendix D).

The project was designed to be used in three different time sequences utilized for Child Development courses. The sequences included on-campus and instructional television

courses in a seventeen week time span and the abbreviated six week Summer Session.

Final results of class performance are shown which compare results after project completion with base line data. Included are pre-test and post-test results on Chapters 9 and 10 and results of final examination mini-case studies. Results of teacher-scored games booklets are noted, along with the final grade achieved (Appendix E).

On the day of their final, students were asked to evaluate the effectiveness of the game booklet on a questionnaire and to make suggestions for booklet improvement (Appendix F).

CHAPTER IV: SOLUTION STRATEGY

Child Development courses at El Camino have for many years required that students interact with children from infancy through adolescence. These interactions occurred in the form of projects which varied with the setting and the length of the course. Project forms varied from one instructor to another and the format was changed somewhat every semester to better ensure that the work presented by the student was original. Slight changes in format made it easier for instructors to detect "re-cycled" projects.

In years past, THINKING IS CHILD'S PLAY by Evelyn Sharp (1969) was used as a source of information for students doing research on the Preoperational Period as described by Piaget. Publication of the book was terminated in 1980. PIAGET: A HANDBOOK FOR PARENTS AND TEACHERS OF CHILDREN IN THE AGE OF DISCOVERY, PRESCHOOL-THIRD GRADE by Felton and Peterson was recommended to be used instead. Students avoided buying the new edition (1983) when the price more than doubled. It became obvious to the instructors that students tried to complete projects with a minimum of background. Relying on class readings and discussions, many students attempted to compete their projects without the benefit of any cohesive written materials other than their textbook.

One possible way of solving the problem of an inadequate Preoperational-age student participation project would have been to eliminate the requirement. Students could have replaced this particular project with one that required researching articles. This approach would have required strong reading skills and would have removed the benefits derived from meeting and working with children. Opportunity to apply theory in a practical way would have been lost. Most students in the past enjoyed working with children even if they did a less-than-adequate job on their projects.

It was the writer's conviction that Piagetian concepts introduced in Child Development classes should be taught as concretely as possible to ensure a strong knowledge base. Over the last several years the writer had become increasingly frustrated over the lack of student understanding about using easily available materials such as water, sand, play-dough and household materials to master and demonstrate Piagetian concepts. The textbooks had given only a small sampling of possible ideas for student experimentation.

The writer also felt that students were entitled to a satisfying "vehicle" for interacting with young children. Child Development instructors have the responsibility of developing meaningful projects which provide a framework for

student-child interaction, while demonstrating theory application. Students needed an opportunity to reality-test their dreams of working with children in as positive a manner as possible.

One solution to the problem was giving the students an adequate background in application of Piagetian theory by creating a booklet using Piagetian games appropriate for use with a child between the ages of three and eight. The materials necessary to complete the project were easily obtainable and directions for completion were self-contained.

The viable solution was one in which the students were given a numerically assigned, color-coded (by semester) booklet. Once handed in, the graded booklet was returned only for feedback and student perusal and became college property. This prevented some of the "recycling" of student papers which El Camino instructors were experiencing.

Since all students were confined to exactly the same format in a given semester, criteria for grading was uniform and booklets were scored objectively. Students were able to determine the point value (grade) for each section.

In previous semesters, students were handed a project outline which was explained in class. They were encouraged to visit their instructor during office hours for any points which needed clarification. Although the directions had seemed clear to instructors, it was evident that a number of

students every semester missed whole parts of the assignment which instructors thought necessary for accurate completion.

With students using a booklet format to complete their assignment, the following occurred:

1. Students showed evidence of a conceptual understanding of the Piagetian stages of cognitive development based on a systematic collection of data.
2. Students demonstrated analysis and synthesis of data and were able to recognize the distinct characteristics of the Preoperational vs. the Concrete Operational period.
3. Students demonstrated understanding of Piagetian vocabulary as applied to project examples.
4. Students explored their own reactions to working with children to determine if Early Childhood was an appropriate career choice.

Successful completion of the project was contingent on careful classroom preparation. At the beginning of the semester students were given thirty selected test bank (pre-test) questions from Chapters 9 and 10 of their textbook, THE DEVELOPING PERSON, by Berger. The base-line data obtained determined students' entry-level knowledge of the Preoperational and Concrete Operational periods (Appendix B).

To complete their project, students completed the required text book readings and participated in a

class-scheduled Piagetian Game Day. Students observed and interacted with invited neighborhood children between the ages of three and eight. Students turned in, for evaluation, observation forms indicating how the participating children performed.

Students attended a computer session at the El Camino Learning Center to familiarize themselves with computer operations and the content of the program being used.

A slide/lecture presentation of children's art (developed by the writer) discussed the use of projective techniques to assess children's cognition. After discussing the pros and cons of using evaluation instruments such as the Draw-A-Person and Complete-A-Man tests, Kellogg's and Lowenfeld's hierarchies were demonstrated.

Students used Lowenfeld's system to evaluate children's drawings in preparation for analyzing their own child-subject's work.

After completing a game booklet (Appendix A) with a child between the ages of three and eight, the student identified the Piagetian stage and/or substage the child was experiencing. The student selected a mimimum of three specific measures for evaluation of the child's cognitive level (Stone, 1983). These included having the child play Piagetian games, use the computer or do paper and pencil tasks and do a drawing of himself or his family. To complete

the project the student:

1. Recorded pertinent information about the child on the first page of the booklet.
2. Chose a minimum of six booklet-contained Piagetian games to play with the child and recorded results.
3. Engaged the child in a series of computer games (EARLY GAMES) or made up worksheets to identify the child's ability to recognize numbers and letters.
4. Obtained at least one sample of the child's drawing for cognitive analysis (Lowenfeld, 1957).
5. Completed a ten minute naturalistic observation of the child.
6. Recorded and interpreted all information on booklet forms by circling his/her choices among those given, with supporting data to justify his/her choice.
7. Summarized findings in a paragraph, identifying the child's cognitive level according to the Piagetian hierarchy.

On the last day of class students took a final exam which included ten Mini-case studies which tested for students' ability to identify characteristics of Piaget's stages. They also completed a Feedback Survey to evaluate the game booklet.

CHAPTER V: RESULTS, CONCLUSIONS AND RECOMMENDATIONS

PRESENTATION AND ANALYSIS OF RESULTS

IMPLEMENTATION I

Of the forty-six Child Development students who enrolled for the Summer Session course on June 20, 1984, thirty-six completed the course on August 1, 1984. During that period, the class met Monday through Thursday evenings from 6 to 7:50 p.m. The class retention rate was 72% of the original number of students, well above the normal expected retention of 50%.

As part of their class assignments, students were each required to complete a Piagetian project with a child between the ages of three and eight (Appendix A). Upon completion of the project students were expected to be able to differentiate between the cognitive skills of the Preoperational and Concrete Operational periods as defined by Piaget. All of the students who completed their Piagetian project also successfully finished the course with a passing grade.

During the first week of class students were given two pre-tests based on a total of thirty questions from Chapters 9 and 10 of their assigned text, THE DEVELOPING PERSON (Berger 1980) to establish base-line data. Forty-four students completed the pre-tests (Appendices B,C) which

covered material on the Preoperational Period. Six students dropped the course in the interim and thirty-eight took the post-tests at the end of the fourth week of class.

The pre-test Mean for Chapter 9 with a Standard Deviation of 2.8 was 8.3. The Chapter 10 pre-test mean with a Standard Deviation of 2.4 was 7.7 answers correct.

Post-test results of Chapters 9 and 10 fell slightly short of the projected goal of 12 correct answers or 80% with mean outcomes of 11.4 and 11.6 respectively.

Students were given a series of ten mini-case studies as part of their final exam. They were asked to identify through various clues congruent with Piagetian theory, the possible Piagetian stage of each of the case-study subjects. Test results showed the mean to be 7.7 correct answers out of a possible 10. This was .3 of point short of the predicted outcome (eight out of ten) or 80% correct. Students were also asked to complete a Feedback Survey immediately after their final examination. Twenty-seven people responded (Appendix E).

Results

Of the thirty-six students who finished the course, twenty-six received full credit on their Piagetian project with scores of 100%. Two received a grade of 95% and two people scored a 90%. Two of the remaining scores were 80%, with three people receiving scores of 70%. One student did

not complete her project and did not receive a project grade. The mean score of thirty-five students who completed the project was 95%, falling into the "A" range. The students' mean or average final grade for the course (excluding the student who did not complete her project) was a 3.14 out of a possible 4.0 average or a low "B".

Four recently immigrated students with limited English scored percentages of 70, 80, 90, and 100 respectively on their Piagetian projects. These scores contrasted sharply with their final course grade, a "D". This indicated to the writer that the Piagetian project was easier for the limited-English students to follow and interpret than the assigned text and test materials used for the rest of the course.

Analysis

The scores generated by the class, do not tell the whole story. The course was demanding and intensive because of the short time frame. Students were required to be in class for 7.36 hours per week for six consecutive weeks, taking only one day off for the Fourth of July holiday. Students enrolled in this course during a normal semester would cover the same material in a period of seventeen weeks. This class met the challenge of mastering Piagetian concepts with enthusiasm. On Piagetian Game night, when students brought child guests to play Piagetian games, many

stayed to discuss the results long after the children had gone home.

Although only twenty-seven students completed the Feedback Survey (Appendix E), eleven people wrote additional comments about their feelings on how the booklet could be improved. One person mentioned that using white paper inside the booklet would have made it more readable. (This first booklet was printed on pink paper.) Although nine people had enjoyed using the check list and one student would have preferred using his/her own outline, fifteen people like the checklist but felt they needed more room to write comments. One student said, "...everything was there so the student didn't need to think very hard to get a conclusion." She did add however, "It did present the stages of development and you could relate them to the child you played with." Another student commented, "The information was outlined in such a way that it left the student an easy path to complete the project without enough of the student's own creativity. I feel that it is up to the student to develop her own methods of application with the child being observed, but then it was also made easy enough for some students to put little effort and time into the observation."

A student, who the writer feels most effectively pinpointed a booklet weakness said, "Many times I didn't know whether comments were wanted or if you just wanted a

check in the box. Thus, I gave my comments when I encountered something I thought interesting." She put into words the ambivalence the writer felt when creating the booklet. How does one strike a balance between leading students through the learning process and at the same time involve them in creating a solution without giving them all of the answers?

Based on the information given by students in the Feeback Survey, the writer decided that the booklet should retain a check-list format. This would be supplemented however, by the student's perceptions as his/her subject played the games. To implement this idea, a space was provided after each game in the newly formatted booklet. In the revised edition the student is asked to, "Tell what happened," after each game.

IMPLEMENTATION II

Two Child Development classes used the Piagetian Game booklet (Revised) during the Fall, 1984 semester. One group, an eighty-six member class managed by the writer, was an El Camino instructional television course. The other class, comprised of sixteen students, was taught on-campus by a fellow instructor. Both groups were given the Piagetian Game booklet at mid-semester. This corresponded with the time period in which the Preoperational and Concrete Operational periods were being studied.

The instructional television students were also given a project appropriate for Middle Childhood children between the ages of eight and eleven. These students were able to select one of these two projects for their class project grade. An extra credit option involved completing both projects.

Twenty-five students completed only the Piagetian Game booklet. Twenty-two people chose the Middle Childhood project. Thirty-eight participants completed both the Piagetian Game booklet and the Middle Childhood project.

Results

A total of sixty-three students completed a Piagetian Game booklet with a child between the ages of three and eight. Fifty-five students chose the Booklet as their primary project for their grade. The scores ranged from a high of 100 points to a low of 70 points. Twenty-three people received 100 points. Seven earned 95 points. There were sixteen grades of 90 points, an 87, two 85's, one 80, two 75's and two with 70 points.

The average grade for the Piagetian Game booklet with the instructional television students was 91 points, or an "A" grade. These same students received an average of 7.32 out of a possible 10 points in their mini-case studies administered as part of the final examination. While tallying results, the writer discovered that two students

had forgotten to take the mini-case studies part of the test. Their scores were therefore not included.

Analysis

It was interesting to the writer that many of the students in the instructional television class did at least as well in completing their projects as students who had utilized the Piagetian Game booklet during the summer on-campus session. The instructional television students' only direct contact with Piagetian principles other than text book assignments, a brief review session and a very limited television discussion of Conservation, took place during an optional-attendance Piagetian Game Night. (Thirty-three students came with children.)

A number of students tried every game and exercise in the booklet with their subject even though the directions mentioned that they try a minimum of two exercises in each segment. The children were rather thoroughly examined! One student (a mother) tested four boys. Although all of these children are in the Middle Childhood age range, she drew heavily on a number of the games designed for younger children. She was delighted with her discoveries and was surprised to find quite a range of cognitive behaviors in spite of the limited age range of her subjects.

Recommendations

The writer would recommend the retention of the

"revised" format of the Piagetian Game booklet used during the second implementation. The students had to justify their answers by commenting on exactly what they had witnessed in working with the child. It was much easier for the instructor to discern if the students had actually played the games, or had just taken a guess at the outcome.

The outside cover of the booklet will be changed every semester and the numbering system will be retained. The numbers, however, will be given in class by individual instructors assigning the booklet. Slight changes will be introduced from one semester to the next, helping to ensure original work from the student.

Allowing students to fill in their observations in appropriate booklet spaces in their own handwriting could prevent some of the "recycling" of old papers done by students in previous semesters.

Innovations sometimes produce unexpected results. One student was discovered last semester to have turned in his Piagetian Games project in one handwriting and his class journal in another. After he received an "F" in the course (with a special letter from the writer explaining why) his wife called to say that she had filled in the booklet!

A colleague's suggestion about including some Piagetian questions on dreams was added for the latest revision of the Game booklet. This gives students an alternative and will

perhaps make grading the papers more interesting for the instructors.

A bonus feature of the booklet is that it is easy for instructors to grade. Projects done by previous Child Development students took many hours of grading time. Grades can be determined in less than ten minutes per booklet, a considerable time-saver.

Dissemination

The Piagetian Games booklet will be submitted for copywriting and is currently being sold at the El Camino bookstore. Several community nursery school teachers and directors have expressed interest in using the booklet at their schools. The booklet will also be used in a preschool training course in connection with a Nova University practicum project.

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APPENDIX A
PREOPERATIONAL/CONCRETE OPERATIONAL PROJECT

EL CAMINO COLLEGE

PSYCHOLOGY 40

CHILD DEVELOPMENT

PREOPERATIONAL/CONCRETE OPERATIONAL PROJECT

ANN HUSMANN
COPYRIGHT, 1985 (IN PROCESS)

BOOKLET NUMBER_____ (ASSIGNED BY INSTRUCTOR)

STUDENT NAME _____

REGISTRATION NUMBER _____

SEMESTER (____FALL ____ SPRING ____ SUMMER) SECTION NUMBER_____

PROJECT COMPLETION DATE:

CHECK ONE: _____ ON-CAMPUS CLASS _____ ITV-INSTRUCTIONAL TV

INSTRUCTOR/COURSE MANAGER:_____

I declare that the work presented in this booklet is my own and that I have worked with the child named in this project to complete the assignment.

STUDENT SIGNATURE _____

DATE:_____

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.....play is such a powerful lever in the learning process of very young children, to such an extent that whenever anyone can succeed in transforming the first steps in reading or in arithmetic, or spelling into a game, you will see children become passionately absorbed in those occupations, which are ordinarily presented as dreary chores.

from Jean Piaget. The Science of Education and the Psychology of the Child. New York: Viking Press, 1972.

Dear Student,

This booklet contains the information you will need to complete your project. You are asked to select a child between the ages of three and eight with whom to interact and for whom you will determine the cognitive stage of development as described by Piaget and his colleagues. Knowing these stages will help you to be sensitive to the children with whom you will work (Freschi,1981).

The booklet is divided into <u>five</u> sections. Each section will give you a cognitive view of the child. By putting together the results of each section, an integrated picture of the child's cognitive level should emerge. Your immediate impressions will be recorded in each section and can then be summarized at the end of the booklet.

Section I contains a variety of Piagetian games, both easy and more difficult. Section II illustrates the format for a series of computer games and may be played with the child at the Computer Center (Library Basement). These games may be duplicated off-campus with paper and pencil tasks, using the same ideas. Section III calls for analysis of the child's drawing, according to a system developed by Victor Lowenfeld. Section IV consists of a ten minute observation of the child, done "naturalistically" or in the child's natural setting. Section V will contain your summary, pulling together the three aspects of measurement you have used with the child.

Your grade will be determined by how completely you have followed the booklet outline and how accurately you have drawn conclusions based on the data collected. Note the <u>possible</u> points allowed for each Section. REMEMBER-- THIS PROJECT IS TO BE A WONDERFUL AND FUN EXPERIENCE FOR BOTH OF YOU. THERE ARE NO "RIGHT" OR "WRONG" ANSWERS BUT THE RESPONSES ARE CLUES TO THE COGNITIVE LEVEL OF THE CHILD.

To complete your project:

1. Fill in Background Information on page four. (10 points)
2. Choose a minimum of <u>two</u> Piagetian games or exercises from each category in Section I. Tell what happened, recording results. (40 points)
3. Play computer games with child at the Computer Center or use substitute games. Record results. (10 points)
4. Have child draw a picture of him/her self or his/her family for analysis. (10 pts.)
5. Complete a 15 minute Naturalistic Observation of the child. (10 points)
6. Complete Summary pages. (20 points) (Total 100 Points)

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Students of Child Development have a wonderful opportunity to view children at close range and to examine their thought processes through the playing of Piagetian Games. Using materials from around the house in an imaginative and playful way, a student can compile a body of knowledge about a particular child and knowledge about children in general. Knowing about developmental stages of cognition, for instance, helps teachers to match a child's curriculum needs to his/her developmental needs. Striking the correct balance between what a child already knows and helping him/her to reach out for new and meaningful discoveries is a challenging task.

Understanding a child's perception of space, time and distance helps to "unlock" the mysteries of a child's world. The sizes or shapes of two different containers may lead the child to believe that there is more or less liquid in one than in the other. A young child tends to focus on one aspect of a container and neglects to look at the compensating factors. For example, a shallow but wide saucer may hold the same amount of liquid as a tall thin glass. But the child may not be able to make the comparison accurately. Gradually, as the child interacts with his/her environment, he/she begins to understand that two ounces of liquid remain exactly that amount, no matter what the size or shape of the container.

Try explaining the concept of "tomorrow" to a person under five years of age. Since young children live very much in the present tense, asking them to wait until "tomorrow" is like asking an adult to wait for a next year's vacation three hundred and sixty-four days from now. Pulling out a road map and demonstrating that Grandma lives in an east coast American city while the child lives in a house near a little dot that says "Torrance" or "Inglewood" doesn't always make sense to a six year old. Gradually, as a child internalizes what he sees and hears and begins to realize how it applies to his own life, his cognitive skills become stronger and more adult-like. Each child has his/her own timetable.

It was Jean Piaget (1896-1980), a Swiss psychologist, who reminded us that children often think very differently than adults. To test his theories, he asked children many questions and played games with them. When children of similar ages came up with similar answers, he began to formulate some basic ideas about children's thought patterns or cognition. During the passing years he put many of his ideas in writing. Others began to study his work, sometimes agreeing with his perceptions and sometimes challenging his conclusions.

And now the challenge is yours. You are asked to discover the cognitive level of at least one child. You might consider working with another child of a different age for extra credit. This would give you an opportunity to look at individual differences among children and would also help you to sort out some cognitive characteristics which apply to young children.

BACKGROUND INFORMATION:

Background information is very important because it sets the stage and helps you to establish a frame of reference about the child. Please remember to honor your subject's privacy. Use FIRST NAME ONLY!!!

CHILD'S NAME _____ AGE _____

DATE OF BIRTH _____

NUMBER OF SIBLINGS AND THEIR AGES _____

CHILD SPENDS WEEKDAYS _____ AT HOME _____ AT BABYSITTER

_____ IN NURSERY SCHOOL

_____ OTHER

Giving the child some quality "one-to-one" attention can help the child become better acquainted with you and make him/her feel more at ease. The questions you would ask should not be "snooping" but should give the child a chance to express himself and to be appreciated just for being him/her self.

For example: If you could order your favorite food tonight, what would it be?
All children have favorite toys. What kinds of toys are the most fun ?

RECORD BELOW JUST HOW YOU APPROACHED THE CHILD AND DEVELOPED THE RAPPORT NECESSARY TO INITIATE THE GAMES:

SECTION I PIAGETIAN GAMES

Part 1-- A LOOK AT THE "CLASSICS" IN CONSERVATION

Much has been written about how young children respond to the problem of Conservation-- the Piagetian principle that certain properties of a given quantity of matter such as volume, weight, etc. remain constant despite changes in shape, length or position. It should be noted that no matter what your textbook says about how children generally respond, each child progresses according to his/her own cognitive time-table. Not every child gives a "textbook" answer!!!

A. Matter. Use the wonders of canned biscuits or Play doh to discover how the child responds. Establish equivalence between two biscuits, but let the child decide the equivalence and make any adjustments he/she considers necessary.
BEFORE ALLOWING CHILD TO CHANGE THE SHAPE OF ONE BISCUIT ASK:
"IF YOU ROLLED THIS BISCUIT INTO A WEINER, WOULD IT BE BIGGER, SMALLER OR THE SAME AS THE OTHER ONE?

RECORD THE RESPONSE BELOW. TELL WHAT HAPPENED.

B. Liquid. Establish equivalence by pouring an equal amount in two clear glasses of the same size. Ask child to confirm equivalence.
THEN, AFTER YOU CHOOSE ANOTHER CONTAINER BUT BEFORE the child pours the liquid from one of the glasses into a tall, skinny glass, a flat dish or four tiny glasses, ask:

"DO YOU THINK THERE WILL BE MORE OR LESS, OR THE SAME AMOUNT ONCE YOU POUR IT IN HERE (the new container or containers)? WHY DO YOU THINK SO?

Allow child to do the pouring and ask him/her to confirm the first answer, "the guess". Ask," WHY DO YOU THINK SO?"

RECORD THE RESPONSE. TELL WHAT HAPPENED.

PREOPERATIONAL (Preconceptual)	PREOPERATIONAL (Intuitive)	CONCRETE
A non-conserver; Just plays with materials	A non-conserver; Fooled by appearance; CENTRATES (Inability to take to consider 2 dimensions at same time)	A conserver Understands amount is constant

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Harder Versions of Conservation Tasks:

C. Take one hunk of Play doh and make a total of six blobs.
Place four blobs in one row and two more beside it.
Ask child how many blobs make up the "whole hunk".
Then ask: IF YOU GAVE ME HALF OF THE BLOBS AND YOU TOOK THE OTHER HALF, HOW MANY WOULD EACH OF US HAVE?

Try this with larger amounts and other fractional parts to see what happens.

TELL WHAT HAPPENED.

PREOPERATIONAL (Preconceptual)	PREOPERATIONAL (Intuitive)	CONCRETE
Can not count accurately	Is beginning to do simple 1-1 correspondence	Is able to handle simple math with materials there

D. Take a clear glass with water and have sugar handy.
ASK: WILL ANYTHING HAPPEN TO THE WATER LEVEL IN THE GLASS WHEN YOU ADD SUGAR? (OR SAND?) Use at least 1/2 cup of sugar or sand. Note "before pouring" and "after pouring" answers.

TELL WHAT HAPPENED.

PREOPERATIONAL (Preconceptual)	PREOPERATIONAL (Intuitive)	CONCRETE
Doesn't know at all.	Doesn't know until child sees results Still might not understand	Knows before trying that level will change

-6-

Part 2--CLASSIFICATION

Classification is a skill we begin to acquire at birth and continue to work on until we master complex classification during what Piaget calls Formal Operations.

1.Preclassification skills are a prelude to using more complex skills and may demonstrate a child's awareness of likeness and difference. Try easy tasks such as A or B.

A. Get out the button box and an empty egg carton. Have the child sort buttons, placing them in any way he/she wishes. There is no one correct way. Ask why certain ones are put in the same cup, etc.
B. Choose small household items such as paper clips, pencils, combs, etc. and put them into a box. Ask child to pick up two items at a time and tell how they "go together".

---

2. True classification begins with Class Inclusion, the idea that objects can belong to more than one class.

Fill a shallow dish with one color of M and M candies, selecting only two of another color.
Ask: ARE THERE MORE green M AND M CANDIES OR MORE M AND M CANDIES?

TELL WHAT HAPPENED.

PREOPERATIONAL (Preconceptual)	PREOPERATIONAL (Intuitive)	CONCRETE
Enjoys sensory experiences of handling materials	A: Can classify according to color or shape (early) Can classify using both. (later)	Can give logical reasons for classification
Can sometimes point to matching color, but can not name it. Sometimes confuses red/orange or blue/purple.	B: Can tell why things "go together"	Can classify using color, shape, size
		Can do class inclusion.

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Part 3--SERIATION

Seriating involves being able to make comparisons. The way a child handles this aspect of his/her environment gives important clues about the child's cognitive development.

A. Cut the series of cards from the page.(SEE LAST PAGE OF BOOKLET.)
   1. Have child try to put cards 1-5 in size order from smallest to largest dolls.
   2. Being able to place things in reverse order is much more difficult. Now give child three additional doll cards and ask him/her to add them to the end of the same row, but having each doll smaller. (Reverse order)

B. Ordering Spools ***
   1. (easy version) Take a paper towel tube and a piece of string and three thread spools.
   2. (harder version) Rotate the tube in different directions after the child has watched you put the spools in the tube.

   Ask: Which color will come out first? Next? Last?

*** Idea adapted from THINKING IS CHILD'S PLAY by E.Sharp.

TELL WHAT HAPPENED.

PREOPERATIONAL (Preconceptual) Can not put in size order	PREOPERATIONAL (Intuitive) Can place in size order by comparing 1 at a time	CONCRETE Can easily do size-order and can reverse

TELL WHAT HAPPENED.

PREOPERATIONAL (Preconceptual) Will not know answer without peeking	PREOPERATIONAL (Intuitive) Can guess order in simple version	CONCRETE Can give colored spools in correct regardless of which way tube is turned.

-8-

Part 4 (Choose A or B)
A. ANIMISM

Young children often believe in a magical world and attribute life-like qualities to inanimate objects. To them, teddy bears and puppets are alive. Things that have movement are often also believed to have "aliveness".

Ask your subject about the following items or think of some on your own, being sure to record the answers given.

1. Is a dog alive? Why or why not?

2. Is a watch alive? Why not? Or-- Why do you think so?

3. Is a plant alive? Why? Or--Why not?

4. Is fire alive? How do you know?

5. Is a puppet alive? Why or why not?

6. Is an electric light bulb alive? Why or why do you think so?

7. Is the wind alive? Why or why not?

PREOPERATIONAL (Preconceptual)		PREOPERATIONAL (Intuitive)		CONCRETE	
Believes that any object can life (i.e.,dolls)		Believes that only objects which move are alive		Knows that only things which move (i.e. animals) on their own are alive	

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B. DREAMS (Suggested by Sharon Van Enoo and based on J. Piaget's exploration of children's dreams as documented in THE CHILD'S CONCEPTION OF THE WORLD (1969).

Ask the child the following questions:

1. Do you know what a dream is?

2. Where is the dream?

3. Where does it happen?

4. Can you see it?

5. Could I see it if I were there?

6. Can you touch it?

PREOPERATIONAL		
Believes that dreams come from outside the body and are caused by an external force.		
CONCRETE		
(Early)	Transitional belief--that dream originates in the body, but takes place outside of the body.	
(Late)	Aware that dreams come from within the body, that they are thoughts, and that they occur in the mind.	

COMPUTER GAMES

SECTION II (THIS SECTION CAN BE DONE WITH OR WITHOUT THE COMPUTER. THESE GAMES ARE REALLY SIMPLE PENCIL AND PAPER EXERCISES. BUT--IF YOU HAVE THE TIME, THE CHILDREN REALLY ENJOY A "COMPUTER EXPERIENCE".

Learning Center Computer Lab (Library Basement)
Hours: Monday through Thursday, 8:00 a.m.-8:30 p.m.
Friday, 8 a.m.-4:30 p.m. CLOSED WEEKENDS
Our Programs are EARLY GAMES FOR YOUNG CHILDREN and MONSTER HUNT.

EARLY GAMES, a set of nine entertaining, educational games, is controlled by a single program. Although some adult assistance is helpful at first, even very young children can soon select a game, play it, return to the menu, and select a different game.....all by themselves! The activities are non-aggressive, and help children to develop basic skills.

MENU.....The menu consists of a series of pictures depicting the games. To select a game, press any key while the picture of the game desired is being shown.
MATCH NUMBERS....Find the key which matches the number displayed on the monitor.
COUNT.....Count the blocks and press the appropriate key. This and the next two games become more difficult as they are played with success.
ADD.....Add stacks of blocks together.
SUBSTRACT.....Subtract one stack of blocks from another.
MATCH LETTERS....Find the key which matches the letter displayed on the monitor.
ALPHABET.....Enter the letters of the alphabet in the proper order.
NAMES.....To begin, an adult enters the child's name whem prompted by the program. The child can then practice spelling his/her name repeatedly with some guidance from the computer.
COMPARE.....Determine which of four shapes is different from the rest and enter its identifying number.
DRAW.....To draw, press any key except ESC and RESET. The general position of the key on the keyboard determines which direction will be drawn. (On color monitors, press SPACE BAR to change color.)
Please note: The RESET key will return the user to the menu. Using it to do so, however, is poor computer training. Teach your child to use the ESC key to return to the menu.

MONSTER HUNT is a fun game for those who easily master the EARLY GAMES program. The game can be played at a simple or a more complex level. It involves listening to sounds which give clues to the monster's location. This game, of course, could not be duplicated with paper and pencil tasks.

The best times to go to the Lab are in the morning before 10 a.m. or after 4:30 p.m. Anthony Guidon is the Lab Director. He also has helpers. These people are our contacts and will assist in helping you to get started and to iron out any possible "bugs".

Do not be dismayed if your "subject" is better at the computer experience than you are. Children and computers seem to have a natural affinity for one another--or something like that.!!!!

COMPUTER SURVEY

CHILD'S NAME_____ AGE____

1. How long did child play with the computer?_____

2. Which game seemed to be the most enjoyable?_____

3. Did the child have any previous experience with the computer?_____

4. Did the child have any difficulty with selecting the game from the MENU?
_____

5. Did the child learn anything he/she did not know before? Specify.
_____

6. If you were to make any changes in the present program , what would the changes be?
_____

Please check the games played, and if possible, give some indication of the results.

1. MATCH NUMBERS	YES____ NO____	6. ALPHABET	YES____ NO____
2. COUNT	YES____ NO____	7. NAMES	YES____ NO____
3. ADD	YES____ NO____	8. COMPARE	YES____ NO____
4. SUBTRACT	YES____ NO____	9. DRAW	YES____ NO____
5. MATCH LETTERS	YES____ NO____		

SECTION III

DRAWING AND SPATIAL RELATIONSHIPS

Piaget reminds us that, "The subject begins drawing what he knows about a person or object long before he can draw what he actually sees. In learning to interpret spatial concepts children first develop TOPOLOGICAL relationships in very general terms. They learn concepts of "inside", "outside" and "beside", at first focusing only on how objects relate to one another. As they gain more experience, they begin to take into account Perspective (viewing from a particular reference point) and Planes (foreground, background) as well as proportion.

Ask child to draw a picture of him/herself or his/her family in the space below, using an ordinary pencil.

Victor Lowenfeld, in his book CREATIVE AND MENTAL GROWTH, 3rd Edition (1957) evaluates children's drawings by comparing their characteristics with the chronological age of the child. These findings can be put roughly into the same categories as the Piagetian stages of cognition.

CHECK THE ONE WHICH SEEMS TO BEST FIT DESCRIPTION OF DRAWING.

PREOPERATIONAL (Preconceptual)		PREOPERATIONAL (Intuitive)		CONCRETE	
Scribbling (early) Scribbling (can tell what scribbles mean) "Body" with 1 or 2 parts		Representational, showing more than head and legs. Includes only what is considered important		Representational with detail Can use a horizon line or edge of paper for perspective. Proportional figures shown.	

SECTION IV NATURALISTIC OBSERVATION

CHILD'S NAME_____ AGE_____

During the time you spend with the child, try to draw yourself aside and observe the child as objectively as possible in the setting of his/her own environment for a period of 15 minutes. Record your results below.

NATURALISTIC OBSERVATION

SUMMARY

(PARTS A AND B MUST BE COMPLETED FOR FULL CREDIT)

CHILD'S NAME _____

DATE OF BIRTH _____

PART A:

	PREOPERATIONAL		CONCRETE	JUSTIFICATION FOR CHOICE
	Pre-conceptual	Intuitive		
SECTION I Part 1 CONSERVATION				
MATTER LIQUID				
Part 2 CLASSIFICATION				
Part 3 SERIATION				
Part 4 ANIMISM/DREAMS				
SECTION II COMPUTER GAMES				
SECTION III DRAWING				
SECTION IV NATURALISTIC OBSERVATION				

PART B: USING THE CHART AS A STARTING POINT, IN YOUR OWN WORDS SUMMARIZE YOUR FINDINGS ABOUT YOUR SUBJECT IN AT LEAST THREE PARAGRAPHS. NOTE ANY IDEAS IN WHICH YOUR CHILD DID NOT "FIT" THE DESCRIPTIONS GIVEN. DID THE CHILD PERFORM AT A COGNITIVE LEVEL HIGHER OR LOWER THAN YOU ANTICIPATED? EXPLAIN. (Please use the next page for writing PART B.)

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PART B.

CONCLUSION: BASED ON THE DATA GATHERED IN SECTIONS I, II, III AND IV, IN THE SPACE BELOW IDENTIFY AND CHECK THE APPROXIMATE PIAGETIAN STAGE OF DEVELOPMENT IN WHICH YOU PLACE THE CHILD.

_____ PREOPERATIONAL/ PRECONCEPTUAL
_____ PREOPERATIONAL/INTUITIVE
_____ CONCRETE OPERATIONAL
_____ FORMAL OPERATIONAL

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** Piaget's work was monumental and developmental in scope. His games were reported over a fifty year span, in numerous publications.

Doll
Cookies
(Double
Serration)

APPENDIX B
PRE/POST TEST, CHAPTER 9

Psychology 40 PRE/POST TEST Chapter 9, Berger Text

1. Physical, or sensorimotor, play during the preschool years
   a. is generally a sign of boredom.
   b. facilitates the child's understanding of his environment.
   c. is more often engaged in by boys than by girls.
   d. shows developmental retardation; sensorimotor play belongs in the infancy stage.

2. The best way to tell that children are engaging in rough-and-tumble play rather than fighting is to look for:
   a. blood.
   b. a smile.
   c. physical contact.
   d. other children's reactions to the event.

3. Gross motor skills would be involved in all of the following except:
   a. riding a tricycle.
   b. running down the street.
   c. tying a shoelace.
   d. climbing a ladder.

4. Fine motor skills would be involved in all of the following except:
   a. buttoning shirts and sweaters.
   b. painting.
   c. eating with knife and fork.
   d. riding a tricycle.

5. When children under the age of 3 years start drawing with pencils or crayons, their efforts are:
   a. basically experimental explorations with instruments and paper.
   b. basically shapes such as circles or squares.
   c. attempts to represent some object in their own world.
   d. constructions of abstract designs.

6. "That's nice, Tommy. What is it?" said Aunt Edna as Tommy, age 5, handed her his latest artistic endeavor. According to Kellogg (1970), Tommy is probably at the _____ stage of artistic development.
   a. design b. shapes c. placement d. pictorial

7. Jumping rope is a _____ , while cutting out geometric shapes is a _____.
   a. sensorimotor skill; preoperational skill
   b. physical skill; cognitive skill
   c. coordination skill; intercoordination skill
   d. gross motor skill; fine motor skill

8. Which of the following pictures would a child draw <u>last</u> during the course of artistic development?
   a. a colorful scribble
   b. a tree
   c. a circle within a circle
   d. vertical and horizontal lines

9. If a young child's drawings show people with missing parts (necks, arms, feet, etc.), it is most likely a signal of the:
   a. child's immature motor skill.
   b. child's limited perceptual skill.
   c. child's conception of what parts of the body are most important.
   d. bodily focus of a child's sense of shame.

10. The preschool child's level of competence in gross motor skills such as crawling and hopping is believed by some to signal:
   a. level of success in academic skills in middle childhood.
   b. popularity in adolescence.
   c. chances for longevity.
   d. probabilities of having bone and joint diseases such as arthritis in adulthood.

11. The average 6-year-old is much better than a 4-year-old at:
   a. playing catch.
   b. eating without spilling
   c. sitting still and concentrating.
   d. finding a hidden object.

12. Children under 6 have difficulty reading in part due to their inability to:
   a. scan systematically.
   b. tell left from right.
   c. distinguish nouns from verbs.
   d. perceive depth.

13. Reading readiness is dependent upon:
   a. both actual age and bone/muscle age.
   b. knowledge of the alphabet.
   c. attention span.
   d. ability to regulate and coordinate many simultaneous perceptions.

14. A child who cannot master basic motor skills is most likely to have problems with:
   a. weight control.
   b. sleep disorders.
   c. self-concept.rs.
   d. peer pressure.

15. At age 5, boys are usually superior at _____, whereas girls are superior at _____.
   a. gross motor skills; fine motor skills
   b. mathematics; reading
   c. eye-hand coordination; vocabulary usage
   d. playing cowboys and Indians; playing house or school

APPENDIX C
PRE/POST TEST, CHAPTER 10

Psychology 40 PRE/POST TEST, Chapter 10, Berger Text

Choose the best answer:

1. A preschool child lacks the ability to think:
   a. symbolically. c. visually.
   b. iconically. d. logically.

2. A child is shown two tall containers half filled with water. The contents of one tall container are then poured into a squat container. If the child states that there is more water in the tall container, the child has yet to develop the idea of:
   a. iconic reasoning. c. tertiary circular reactions.
   b. conservation. d. symbolic language.

3. The young child's inability to grasp the principle of conservation helps to explain the child's:
   a. inability to see more than one person's point of view at a time.
   b. tendency to draw a picture of a dime three times is normal size.
   c. inability to understand the relationship between an 8-ounce soup plate and an 8-ounce glass.
   d. inability to understand that both a collie and a beagle are dogs.

4. As children grow from age 1 to age 5, their imagination:
   a. increases.
   b. increases till about age 3, then levels off.
   c. stays about the same.
   d. decreases.

5. The child's tendency to focus on one aspect of a problem to the exclusion of all other aspects is called:
   a. identity. c. eccentricity.
   b. centration. d. reversibility.

6. Because their skills of _____ are not fully developed, 4-year-olds may have difficulty understanding such things as how a person can be an American and a Catholic at the same time.
   a. centration c. classification
   b. conservation d. sensorimotor thinking

7. The average child will come to understand conservation of matter at about age:
   a. 3. b. 5. c. 7. d. 9.

8. The child's inability to consider any viewpoint other than his/her own is called:
   a. validation. c. animism.
   b. egocentrism. d. classification.

9. A child's belief that a chair and a table are really alive illustrates the concept of:
   a. egocentrism.
   b. animism.
   c. artificialism.
   d. totalism.

10. The concept that everything is manufactured, including living beings, is called:
   a. animism.
   b. artificialism.
   c. egocentrism.
   d. iconic reasoning.

11. If you are having several 5-year-olds over for your daughter's birthday, why would it be wise to serve them their chocolate milk in identically shaped cups?
   a. Children believe that the size of a cup or other eating utensil indicates their age.
   b. The children may falsely believe that some got more milk than others if their cups are different widths and heights.
   c. Children this age are egocentric and get upset unless they are all treated the same.
   d. Unless the cups are identical, the children are likely to play with them by classifying them into groups.

12. Egocentrism in a preoperational child refers to:
   a. an unwillingness to help others.
   b. an inability to understand that some operations are reversible.
   c. an inability to take another point of view.
   d. a tendency to focus on only one limited aspect of a problem.

13. A little boy who wants to buy a toy fire engine for his mother's birthday present is exhibiting:
   a. selfishness.
   b. artificialism.
   c. egocentrism.
   d. decentration.

14. Using a Piagetian model, we would expect:
   a. all children to go through the preoperational stage at the same time.
   b. that various children would enter and leave the various Piagetian stages at different times.
   c. some children to be so bright that they skip a stage.
   d. cognitive level to have no effect on the relationships formed by the child or the intellectual tasks mastered until the age of 6.

15. If a group of children is attending a preschool that emphasizes academic skills, you might predict that the group will:
   a. not gain anything from the program.
   b. show temporary gains only.
   c. by second grade, score lower than a control group not attending the preschool.
   d. score higher than the control group by second grade.

APPENDIX D
MINI-CASE STUDIES

CASE STUDIES: For questions 151-160 identify the appropriate Piagetian stage and/or substage, using the possible answers listed below.
a. Sensorimotor b. Preoperational/preconceptual
c. Preoperational/Intuitive d. Concrete Operational e. Formal Operational

151. Mark has been shown a series of cardboard shapes. He can recognize the color "red" but he gets squares and triangles all mixed up. He wants to be just like Daddy when he grows up and he imitates him in play. Mark likes to play outdoors, developing his large muscles.

152. Jonathan is able to use algebraic equivalents and abstract math concepts with good understanding. He tends to be quiet and moody. He demands privacy, especially when phoning his friends. He is selective in his choice of companions and is beginning to spend more time with them than with his parents.

153. Jamie is able to assemble the large and small colored beads to match a model. She thinks that there is more water in the tall glass than in the short, wide glass, even though equivalence has been demonstrated. She recognizes colors and shapes and can trace a pencil maze easily. She learns best by getting involved in an activity.

154. Linda strings beads at random and cannot match them in a given sequence.
She is able to match colors but she cannot name them. Circles can be sorted, but Linda really has trouble with triangles and squares. She loves to play with dolls and talks to herself a lot while playing. She does not get involved in cooperative or dramatic play with other children, but prefers to play by herself.

155. Freddie has just learned to sit alone without being propped. He has begun to use his hands independently and can transfer objects from one hand to the other. He smiles a lot and loves adult attention.

156. Lindsey recognizes that two unsharpened pencils are always the same length regardless of their position. She is not fooled by container shapes and sizes when making comparisons. She enjoys roller skating and jump rope and has begun to enjoy reading comic books and viewing situation comedies on TV.

157. Henry is beginning to be able to conserve liquid and balls of clay. He can group and re-group accurately. His mathematical skills have shown vast improvement in the last few months. He has mastered number concepts up to twenty when he has objects to work with for verification. He is a cub scout, plays soccer and enjoys games which have simple rules to follow.

158. Mary is able to match colors and simple shapes and is able to name them. She feels that there are more red beads than wooden beads in a container that holds 16 red beads and 2 yellow beads, all of wood. When comparing the size of two straws of equal length, Mary feels that they are the same size when parallel to one another. When placed at right angles, Mary is convinced that the straw on the right is longer. Mary shows doubt when asked if 2 balls are the same when one ball is transformed to a weiner shape. She is just beginning to enjoy group games at school.

159. Susie counts, "One, two, three, five," as she puts 3 beads on the table. She can match circles but is having difficulty recognizing the difference between red and orange. She gets green and blue mixed up when matching colors. "Let me do it," is a favorite expression. She asks a lot of "why" questions, not for specific information as much as for communicating with adults.

160. Tommy is beginning to speak in speech patterns understandable to those around him. He does not really play with others, but likes to be near them. He does not know any colors or shapes and learned to walk about seven months ago. His mother is beginning to toilet train him and he is just beginning to get the idea of what its all about. When he plays with toys his actions seem to be more deliberate they they were a few months ago. He is getting very interested in seeing how things work. He seems to have lots of energy but can also tire very quickly. Tommy needs routine in his evey-day schedule to function most effectively.

APPENDIX E
FEEDBACK SURVEY

Psychology 40 Feedback Survey

Getting student feedback helps us to do a better job of preparing to teach the next class in Child Development. Please help us by evaluating the Student Booklet (Project 2) used for the Preoperational/Concrete Operational Period.

FORMAT:
Choose one:

__25__ Easy to follow

__2__ Difficult to use

__0__ Very difficult to use

INFORMATION:
Choose one:

__2__ Not enough information

__24__ Right amount of information

__0__ Too much information

ORGANIZATION:
Choose one:

__9__ Enjoyed using check list

__1__ Would prefer setting up my own outline

__15__ Liked check-list idea but needed more room for comments

TIME PROJECT TOOK TO COMPLETE:

__1__ 1 HOUR __7__ 2 HOURS __5__ 3 HOURS __7__ MORE THAN THREE
__1__ 2 1/2 HOURS

CAN YOU GIVE SOME OTHER COMMENTS ON HOW THIS BOOKLET MIGHT BE IMPROVED? THANK YOU. Ann Husmann